2024 Higher Chemistry Paper 1 – Q8

Section: Chemical Changes & Structure
Topic: Rates of Reaction (Relative rate)

Question summary (Q8):
The relative rate of a reaction which reached completion in 3 minutes 20 seconds is:
A $0.005\ s^{-1}$ B $0.313\ s^{-1}$ C $0.005\ min^{-1}$ D $0.313\ min^{-1}$

Worked Solution:
• For completion-time questions, relative rate = 1 / time.
• Convert 3 minutes 20 seconds to seconds: 3 × 60 + 20 = 200 s.
• Relative rate = 1 / 200 s = $0.005\ s^{-1}$.
• In minutes: 3 min 20 s ≈ 3.33 min, so 1 / 3.33 ≈ $0.300\ min^{-1}$ (not in options).

Final Answer: A — $0.005\ s^{-1}$

Revision Tips:
• Always put time into the unit used in the options before taking the reciprocal.
• Relative rate is a quick-comparison tool; units matter (s^{-1} vs min^{-1}).
• If options mix units, convert your time accordingly and check for common traps like using minutes when seconds are required.